STREAMLINE CARBOHYDRATES SYNTHESIS THROUGH NEW METHODS AND STRATEGIES

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Carbohydrates are the essential and most abundant biomolecules with pivotal roles in numerous biological processes. However, in comparison with proteins and DNA, biosynthesis of carbohydrates is not a template-driven but stepwise process, which results in heterogenous and complex carbohydrates structures. The accessibility to well-defined, pure and sufficient glycans remains a bottleneck in carbohydrates chemistry, impeding the in-depth biological and functional studies and development of carbohydrates-based therapeutics. To address this issue, we have developed new glycosylation reactions with glycosyl *ortho*-(1-phenylvinyl)benzoates (PVB) [1] as versatile donors and new one-pot glycans assembly strategies on the basis of PVB glycosylation [2] for streamlined synthesis of carbohydrates from oligosaccharides to polysaccharides (Figure 1), including plants glycans such as the undecasaccharide from *Dendrobium Huoshanense* [3] and tridecasaccharide from *Angelica Sinensis* [4], fungi glycans such as nona-decasaccharide from *Ganoderma sinense* [5] and tetradecasaccharide from *Lentinus giganteus* [6], nucleosides such as capuramycin [2], mucin-related tumor associated carbohydrate antigens [7], bacterial glycans such as lipopolysaccharide from *Bacteroides vulgatus* [8] and mannose capped lipoarabinomannan up to a 101-mer [9] from *Mycobacterium tuberculosis* [10].

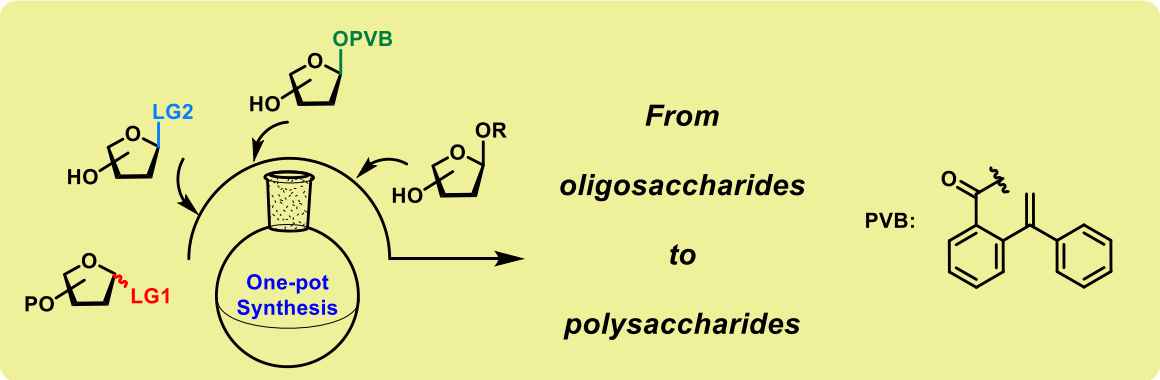

Figure 1. One-pot glycans assembly strategies on the basis of PVB glycosylation

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